

National Cancer Advisory Board (NCAB)  
*Ad hoc* Subcommittee on Global Cancer Research

Gaithersburg Marriott, Washingtonian Center  
Gaithersburg, MD  
November 28, 2017  
5:30 – 7:00 p.m. EST

SUMMARY

Subcommittee Members:

Dr. Francis Ali-Osman (Chair)  
Dr. Deborah Bruner  
Dr. Scott W. Hiebert  
Dr. Beth Karlan  
Dr. Mack Roach  
Dr. Margaret Spitz  
Dr. Edward Trimble (Executive Secretary)

Other Participants:

Dr. Michele Bloch (National Cancer Institute [NCI])  
Dr. Robert Croyle (NCI)  
Dr. Brenda K. Edwards (NCI)  
Dr. Carol Ferrans (Board of Scientific Advisors [BSA])  
Dr. John Flanigan (NCI)  
Dr. Susan Giuliani (NCI)  
Dr. Thomas Gross (NCI)  
Dr. Leah Kaplan (Digital Infuzion Inc.)  
Dr. Barry Kramer (NCI)  
Dr. Wlodzimierz Lopaczynski (NCI)  
Dr. Douglas Lowy (NCI)  
Dr. Elena Martinez (University of San Diego, BSA)  
Dr. Cathy Muha (NCI)  
Dr. Kenneth Nock (NCI)  
Dr. Mostafa Nokta (NCI)  
Dr. Mark Parascandola (NCI)  
Dr. Marie Ricciardone (NCI)  
Dr. Vikrant Sahasrabuddhe (NCI)  
Dr. Hasnaa Shafik (NCI)  
Dr. Sudha Sivaram (NCI)  
Dr. Lisa Stevens (NCI)  
Dr. Martina Taylor (NCI)  
Dr. Stacy Vador (NCI)  
Dr. Deborah Winn (NCI)  
Dr. Joy Wiszneauckas (NCI)  
Dr. Glendie Marcelin, The Scientific Consulting Group, Rapporteur  
Denise Hoffman, The Scientific Consulting Group

**Welcome and Introductions; Brief History and Overview of the Center for Global Health (CGH)**  
*Francis Ali-Osman, D.Sc., Margaret Harris and David Silverman Professor of Neuro-Oncology Research,  
Professor of Surgery, Professor of Pathology at Duke University School of Medicine  
Edward Trimble, M.D., Director, CGH, NCI*

Dr. Edward Trimble convened the meeting; members of the NCAB, BSA, and other participants introduced themselves. Dr. Trimble provided a historical overview of CGH and mentioned that, in 2012, cancer research stakeholders met to define global health priorities for the NCI. Priorities included (1) strengthening global cancer research, (2) building a global cancer research community, and (3) translating research results into practice. In an effort to implement these priorities, CGH partnered with diverse entities, including NCI Institutes and Centers, professional societies, the World Health Organization, the International Atomic Energy Agency, and the International Union for Cancer Control.

A continuing effort of the CGH program is to establish partnerships with both national and global funding agencies, such as the Bill and Melinda Gates Foundation and the Burroughs Wellcome Fund. He announced that several NCAB Subcommittee members met with the new NCI Director, Dr. Norman Sharpless.

**Comments from NCI Leadership**  
*Douglas Lowy, M.D., Former Acting Director, NCI*

Dr. Douglas Lowy thanked Drs. Carol Ferrans, Scott Hiebert and Margaret Spitz and his NCI colleagues for participating in the Subcommittee meeting. Dr. Lowy commented that Dr. Sharpless strongly supports global health research. It is important that the CGH identify how best to use available NCI resources to strengthen global health research.

Dr. Sharpless has requested that a working group comprising of members of the Subcommittee and other *ad hoc* members be established to determine how best to implement the mission/vision for the CHG and to ensure that the program is producing return on investment.

In response to a question from Dr. Spitz, Dr. Lowy replied that the working group will advise the CGH. He surmised that a mission statement for the CGH will be developed as a result of internal discussions within the program.

**Update on Global Pediatric Cancer Research**  
*Thomas Gross, M.D., Ph.D., Deputy Director of Science, CGH, NCI*

Dr. Thomas Gross updated the participants on the NCI's efforts toward improving global pediatric Burkitt lymphoma (BL) research in low- and middle-income countries (LMICs). BL health initiatives initially were established by the NCI in the 1960s to support efforts in Uganda. Despite these efforts, the cure rate of BL has not exceeded 45 percent, which is significantly lower than the average survival rate globally (approximately 95%). To address the disparity in cure rates, NCI's Division for Cancer Epidemiology and Genetics conducted a cohort study to determine the relationship between malaria and BL and how this may impact cure rates. Also, the NCI's Office of Cancer Genomics has discovered genetic-based differences in BL tumors isolated from Africa versus the United States, which may impact cure rates.

Dr. Gross mentioned that the difficulty in accurately diagnosing BL in these regions is a result of the lack of access to tissue specimens. In Uganda, BL is no longer the most commonly diagnosed pediatric cancer, which may be because of misdiagnosis. To strengthen BL research capabilities within LMIC institutions, the Burkitt Lymphoma Research Network of the CGH was formed in 2015 to provide administrative supplemental support for high-impact pediatric pilot projects at five research centers in the United States.

Dr. Gross, highlighting the success of the Network, said that the creation of standard medical treatment protocols by one of the centers resulted in a decrease in BL-related mortality from 60 percent to less than 20 percent.

### *Discussion*

In response to a question from Dr. Bruner, Dr. Gross replied that when conducting research in LMICs, one must consider the potential political challenges (i.e., corruption). It is important to be strategic in the approach, but not prohibitive, if research can continue in a politically unstable country. Dr. Bruner wondered about efforts to build and strengthen laboratories in such countries; resource building in African countries is more palatable. Dr. Gross replied that the Network is still learning what works best. The best use of resources is to build a country's research capabilities.

Dr. Lowy added that the National Institutes of Health (NIH) supports capacity building in Africa (i.e., Common Fund H3Africa Program). Performing research onsite is desirable, but is dependent on the presence of high-quality facilities.

Dr. Trimble suggested to model examples of existing initiatives for pathology diagnostics training (e.g., The University of North Carolina Project, Malawi Ministry of Health Project [UNC–Project Malawi]).

### **NCI CGH Programs to Strengthen Global Cancer Research at NCI-Designated Cancer Centers**

*Lisa Stevens, Ph.D., Deputy Director of Planning and Operations, CGH, NCI*

Dr. Lisa Stevens described the various CGH programs aimed at strengthening global cancer research at NCI-designated Cancer Centers. In an effort to support research in LMICs, the CGH leveraged the successful initiatives of 69 existing NCI-designated Cancer Centers within the United States. The goal of the CGH was to engage the Centers that had ongoing international cancer projects. The CGH discovered that seven Centers already were working in Kenya.

To determine the extent of the Centers' international initiatives, a 2014 report was compiled to identify partnering countries, activities, and focused research areas. In an effort to advance cancer research in LMICs, scientists at the Centers were funded with 1-year contracts or 2-year supplement grants to partner with scientists from LMIC institutions. Nine of the 15 contracts awarded were in Africa; awards spanned various aspects of cancer (cancer control, survivorship, outcomes, etc.). The activities were related to investing in research infrastructure, such as data sharing/harmonization and clinical informatics.

Regarding Cancer Center–LMIC institution partnerships, the report revealed that 14 of the 15 contracts built on preexisting partnerships and 6 institutions leveraged the contracts to partner with additional LMIC institutions. Dr. Stevens said that the results from these partnerships will inform future funding opportunities. Also, these funding opportunities contributed to gaining subsequent support from other related awards. Thirty-two subsequent NIH grants were awarded to the 15 contract grantees; 11 of the 15 contracts received additional investments/support for LMIC research. These results suggest that the partnerships influenced the ability to receive subsequent funding.

Dr. Stevens described four important factors for planning engagement with grantees: (1) supported activities addressed the LMICs' needs and capitalized on LMIC settings to advance cancer science more broadly, (2) seven of the 15 projects included a primary or secondary aim to develop sustainable infrastructure for cancer research in LMICs, (3) preexisting partnerships were valuable and valued, and (4) the awards served as a “stepping stone” for additional funding.

To further partnerships among Centers and other countries, she described a project to build research infrastructure for non-communicable diseases (NCDs). The NCI's Regional Centers of Research Excellence (RCRE) in Cancer proposal aimed to assess cancer and NCDs in LMICs. The CGH supported NCD-focused, hypothesis-driven research by providing 2-year planning grants for RCRE. Dr. Stevens concluded by describing awarded RCRE projects spanning various countries and cancer-related topics.

### *Discussion*

Dr. Bruner suggested that, when working with LMICs, the already limited resources should be used to target cancers that are curable (e.g., cervical cancer). Dr. Stevens replied that the Centers are prioritizing the research areas on which to focus based on lessons learned. Dr. Trimble added that the NCI is focused on implementation science. He reiterated that the NCI does not have sufficient funding to support certain initiatives, but it is working to understand how to best use its resources.

Dr. Ali-Osman said that, to make an impact, expanding the RCRE to western regions of Africa is important.

### **Update on the NCI CGH Affordable Cancer Technology Program**

*Sudha Sivaram, Dr.P.H., M.P.H., Branch Chief, Public Health, Networks and Research Branch, CGH, NCI*

Dr. Sudha Sivaram provided an overview of the NCI CGH Affordable Cancer Technology Program, an early CGH initiative to provide affordable access to cancer technologies/devices. This collaborative effort between the NCI and the National Institute of Biomedical Imaging and Bioengineering sought to provide cooperative agreement Phase I (demonstration of clinical applicability) and Phase II (device validation) grant support to enhance technologies.

Dr. Sivaram described the funded projects from rounds 1 through 3; seven grants were awarded in each round. The round 1 grants were focused on (1) cervical cancer prevention and diagnosis (human papillomavirus [HPV] detection, high-resolution micro-endoscopy), (2) cervical cancer treatment (cryotherapy devices), (3) oral cancer treatment/hepatitis C prevention (photodynamic therapy of oral leukoplakia, a test for hepatocellular carcinoma risk), and (4) breast cancer detection/diagnosis (portable computer-aided detection and a diagnostic for non-invasive breast cancer screening).

The round 2 grants were focused on (1) software to improve quality of radiation treatment plans in LMICs (the radiation planning assistant), (2) holography-based molecular cancer detection using a smartphone, (3) cervical cancer diagnosis (a cytology-free multiplex assay), (4) mobile oral cancer screening (an auto-fluorescence-based mobile intra-oral imaging system), (5) a portable thermo-coagulator, (6) a HPV E6 and E7 oncoprotein test for cervical cancer screening and triage, and (7) diagnosis of Kaposi's sarcoma using a thermos-solar polymerase chain reaction (PCR) assay.

The round 3 grants focused on (1) a cost-effective radiation treatment delivery system for LMICs (delivery of intensity-modulated radiotherapy at a low cost), (2) a real-time urine metabolomics test to diagnose colorectal cancers and polyps in LMICs, (3) rapid detection of HPV-associated cancers (a multiplexed fluorescent assay for detection of 16 HPV-specific biomarkers), (4) esophageal cancer screening (a sponge that can be swallowed to collect esophageal specimens), (5) digital PCR of the BCR-ABL fusion gene for chronic myeloid leukemia (CML) diagnosis and monitoring, (6) smartphone-enabled point-of-care detection of serum markers of liver cancers, and (7) a field-deployable platform for prognostic hepatic cancer screening (a quantitative vertical flow assay to measure molecular serum markers).

## *Discussion*

Dr. Ali-Osman asked what the requirement is for field testing of these technologies. Dr. Gross responded that the requirement is demonstrating device performance specification followed by feasibility of use in the field. Dr. Trimble added that applicants should consider how to market the device (e.g., by having a business partner).

Dr. Mack Roach commented that the radiation planning project in LMICs has broad application.

Dr. Beth Karlan wondered whether the technologies to detect cervical cancer can be adapted to detect oropharyngeal cancer. Dr. Trimble responded that scientists are focused on trying to understand how to screen for pre-malignant lesions and to diagnose and monitor who is at greater risk of HPV-associated malignancies. Dr. Vikrant Sahasrabudde added that he is collaborating with Dr. Wendy Wang (NCI) and U.S., Brazilian, and Mexican institutions to better predict oropharyngeal cancer by testing for E6 and other biomarkers in samples.

In response to a question from Dr. Spitz, Dr. Trimble said that a steering committee that spans NCI extramural divisions exists to ensure that the different project initiatives do not overlap. Dr. Lowy added that each project uses different approaches and therefore avoids redundancy and overlap. The peer-review process for grants adds further assurance of avoiding redundancy.

Dr. Lowy asserted that, to screen for oropharyngeal cancers, one must look at a high-risk population in developed countries. Regarding identifying individuals at greater risk for HPV, Dr. Lowy suggested looking at anti-E6 serum antibodies. It is important to demonstrate the efficacy of cancer technologies in the United States. Dr. Sivaram replied that a collection of implementation indicators will determine the scaling up and widespread use of technologies and the technologies that work best in the field.

Dr. Bruner noted that ethical aspects, such as a lack of access to basic treatment/equipment or the presence of political corruption, must be considered when initiating programs in LMICs. Dr. Roach added that training of people to use new technologies in LMICs is more significant. Dr. Ali-Osman reiterated that knowing the impact of these technology initiatives is important. Dr. Trimble added that the CGH is working with the U.S. Department of State to ensure that countries are receiving the best advice and training on how to use technologies.

## **Update on Various Non-NCI Initiatives to Increase Availability of Cancer Drugs in Africa**

*Edward Trimble, M.D., Director, CGH, NCI*

Dr. Trimble updated the participants on drug access programs in sub-Saharan Africa. The BIO Ventures for Global Health program is a collaboration between the African Organization for Research and Training in Cancer; Pfizer, Inc.; and Takeda Pharmaceutical Company. This collaboration aims to expand access to cancer medicines and technologies, improve healthcare infrastructure, and build clinical and research and development capacity. Another access initiative—a partnership between Pfizer, Inc.; the American Cancer Society; and the Clinton Health Access Initiative—aims to deliver access to chemotherapies and lower-priced cancer treatments. Finally, the Glivec® International Patient Assistance Program, a partnership between Novartis International, Axios International, Chinese Charity Foundation, and The Max Foundation, offers access to and reimbursement for cancer treatments for patients with CML.

## *Discussion*

Dr. Ali-Osman recommended leveraging the recently announced program led by Novartis, the American Society for Clinical Pathology, and the American Cancer Society. This program aims to improve access to

cancer treatment and build healthcare capacity for immunohistochemistry diagnosis in Ethiopia, Uganda, and Tanzania. Dr. Lowy added that telemedicine is not sufficient for cancer diagnosis; training local people on the ground is helpful. Dr. Trimble said that the World Bank has supported the building of laboratories to conduct cancer pathology testing. Dr. Spitz recommended that non-NCI entities fund training programs. Dr. Trimble asserted that strengthening of existing training partnerships between entities located in southern regions (e.g., the partnership between The University of Texas MD Anderson Cancer Center, Brazil, and Mozambique) is needed. Dr. Elena Martinez suggested to model the cancer outreach programs at the University of California at San Diego and St. Jude Children's Research Hospital. Partnering with local communities is important. Dr. Gross re-emphasized the importance of using resources to make the biggest impact. Discussions regarding lessons learned should occur between institutions.

#### **Adjournment**

Dr. Trimble adjourned the Subcommittee meeting at 7:04 p.m. EST.

/s/ Dr. Francis Ali-Osman

Dr. Francis Ali-Osman  
Acting Chair

11/29/17

Date

/s/ Dr. Edward Trimble

Dr. Edward Trimble  
Executive Secretary

11/29/17

Date